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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,265	11/14/2003	Harold A. Ladouceur	60,152-1003	3851

27305 7590 05/17/2005

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EXAMINER	
SHARP, JEFFREY ANDREW	

ART UNIT	PAPER NUMBER
3677	

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/714,265	LADOUCEUR, HAROLD A.	
	Examiner	Art Unit	
	Jeffrey Sharp	3677	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

[1] Claims 1-21 are pending.

Claim Rejections - 35 USC § 112

[2] The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

[3] Claims 10 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As for claim 10, it is not known how a width is measured, as it could be in an axial direction, radial direction, transverse direction, etc. The term "thickness" would be more appropriate. Further, it appears that there is no support for this relative dimensional limitation in the disclosure and drawings. The specification[1] only gives support for the limitation shown in claim 17, which calls for a dimensional relationship between panel portions, and not between a panel portion and a generally radially outwardly extending distal end portion of a barrel portion.

As for claim 12, there is insufficient antecedent basis for the limitation "said inner surface of said L-shaped portion", as claim 8 does not mention an "inner surface". Support for this limitation is, however found in claim 15.

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[1] page 12 lines 15-20.

Claims 10 and 12 have been treated as they are understood.

Claim Rejections - 35 USC § 102

[4] The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

[5] Claims 1, and 3-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Vrana et al. US-2005/0025605.

In short, Vrana et al. suggest a male (self-riveting) fastener (20) comprising: a shaft (24), a co-axial radial flange portion (28) having plurality of circumferentially spaced radial teeth (40,44) including a "generally" radial planar surface (42) extending "generally" perpendicular to "a" circumference of said flange portion (28), an integral tubular barrel portion (46) of "generally" constant cylindrical cross-section, and a bottom wall (34);

said fastener (20) being joined to a metal panel (22) having an L-shaped portion (near 52) including a "generally" perpendicular portion (near 52) that makes face to face contact with an outer surface (40,44) of said radial flange portion (28) and between said radial teeth (at 38) so as to provide a means for anti-rotation, and a radially inwardly directed portion (52) deformed

between a "generally" radially outwardly extending distal end portion (30) and said radial flange portion (28) of said fastener (20);

said radially inwardly directed portion (52) being of "generally" rectangular shape and "generally" parallel to said metal panel (22), having a width of "about" one half or less that of said metal panel (22), and accepting said tubular barrel portion (46) through an opening (50,52);

wherein a "substantially" continuous convex arcuate surface (32) extends from said bottom wall (34) to said "generally" radially outwardly extending distal end portion (30).

[6] Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Foster et al. US-2,269,895.

In short, Foster et al. clearly show a male self-riveting fastener element comprising a shank portion (1,3), an integral tubular barrel portion (6) being of "generally" cylindrical constant cross-section, a flange (4), and a "generally" radially outwardly extending distal end portion (7,8) spaced from said flange (4);

wherein the barrel portion (6) length is less than 60 percent of the outer diameter of said barrel (6).

Claim Rejections - 35 USC § 103

[7] The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

[8] Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ladouceur US-5,868,535.

In short, Ladouceur suggests a male (self-riveting) fastener (20) comprising: a shaft (28), a co-axial radial flange portion (24) having plurality of circumferentially spaced radial teeth (44) including a "generally" radial planar surface (42,46) extending "generally" perpendicular to "a" circumference of said flange portion (24), an integral tubular barrel portion (22) of relatively constant cylindrical cross-section, and a bottom wall (blind portion of hole 38 near 26);

said fastener (20) being joined to a metal panel (52) having an L-shaped portion (near 68) including a "generally" perpendicular portion (near 68) that makes face to face contact with an outer surface (44,46) of said radial flange portion (24) and between said radial teeth (at 46) so as to provide a means for anti-rotation, and a radially inwardly directed portion (68) deformed between a "generally" radially outwardly extending distal end portion (66) and said radial flange portion (24) of said fastener (20);

said radially inwardly directed portion (68) being of "generally" rectangular shape and "generally" parallel to said metal panel (52), having a width of "about" one half or less that of said metal panel (52), and accepting said tubular barrel portion (24) through an opening (50);

wherein a "substantially" continuous convex arcuate surface (inside 22,38,52) extends from said bottom wall (blind portion of hole 38 near 26) to said "generally" radially outwardly extending distal end portion (66).

However, Ladouceur fails to disclose expressly, the specific relative size limitation: "said tubular barrel portion having an axial length equal to or less than sixty percent of an outer diameter of said outer surface of said tubular barrel portion."

Further Ladouceur fails to disclose expressly, the specific material limitation: "said male fastener element formed of carbon steel having a hardness greater than 30 Rockwell on the C scale".

At the time of invention, it would have been obvious to one of ordinary skill in the art, to modify the relative dimensions of the male (self-riveting) fastener taught by Ladouceur, because it has been held that a modification such as a mere change in size of a component would be obvious. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose, 105 USPQ 237 (CCPA 1955).* See also, MPEP § 2144.04 which states: *In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976)* ("mere scaling up of a prior art process capable of being scaled up, if such were the case, would not establish patentability in a claim to an old process so scaled." *531 F.2d at 1053, 189 USPQ at 148.*). In *Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984)*, the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify the material of the male (self-riveting) fastener taught by Ladouceur, to be of greater hardness than RC-30. Ladouceur suggests a heat-treated carbon

steel,[2] and suggests that it is "understood...the preferred material for the self-riveting fastening element of this invention will depend upon the application including the panel metal". Note that it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin, 125 USPQ 416.* It is also common knowledge to choose a material that has sufficient strength, durability, flexibility, hardness, etc. for the application and intended use of that material. In the instant case, one of ordinary skill knows that studs in the art are commonly made of high strength carbon steel[3], and are heat-treated to suit the hardness needs of the application.[4] If a panel (52) happens to be harder or thicker than normal, a male (self-riveting) fastener meant to penetrate or pierce the panel would need to be of greater hardness. This could be done by selectively heat treating parts of said fastener, which is known in the art[5]. Expected results occur when varying hardness as a variable; for instance, those of ordinary skill in that art would recognize that case hardening increases brittleness and proneness to fracture, but would allow better penetration of a self-riveting fastener into soft material (e.g., use in stamping tools, dies, etc...). Ordinary experimentation with material properties would yield an optimum hardness value. Note that it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller, 105 USPQ 233.* Further, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).* Refer to MPEP § 2144.05.

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[2] column 8 lines 25-30.
[3] as evidenced by NPL Engineers Edge.
[4] as evidenced by NPL Chicago-Rawhide.
[5] as evidenced by Arrand US-6,644,903.

[9] Claims 2, and 8-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vrana et al. US-2005,0025605.

In short, Vrana et al. suggest a male (self-riveting) fastener (20) comprising: a shaft (24), a co-axial radial flange portion (28) having plurality of circumferentially spaced radial teeth (40,44) including a "generally" radial planar surface (42) extending "generally" perpendicular to "a" circumference of said flange portion (28), an integral tubular barrel portion (46) of "generally" constant cylindrical cross-section, and a bottom wall (34);

said fastener (20) being joined to a metal panel (22) having an L-shaped portion (near 52) including a "generally" perpendicular portion (near 52) that makes face to face contact with an outer surface (40,44) of said radial flange portion (28) and between said radial teeth (at 38) so as to provide a means for anti-rotation, and a radially inwardly directed portion (52) deformed between a "generally" radially outwardly extending distal end portion (30) and said radial flange portion (28) of said fastener (20);

said radially inwardly directed portion (52) being of "generally" rectangular shape and "generally" parallel to said metal panel (22), having a width of "about" one half or less that of said metal panel (22), and accepting said tubular barrel portion (46) through an opening (50,52);

wherein a "substantially" continuous convex arcuate surface (32) extends from said bottom wall (34) to said "generally" radially outwardly extending distal end portion (30).

However, Vrana et al. fail to disclose the specific material limitation: "said male fastener element formed of carbon steel having a hardness greater than 30 Rockwell on the C scale".

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the material of the male (self-riveting) fastener taught by Vrana et al., to be of greater hardness than RC-30. Note that it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin, 125 USPQ 416.* It is also common knowledge to choose a material that has sufficient strength, durability, flexibility, hardness, etc. for the application and intended use of that material. In the instant case, one of ordinary skill knows that studs in the art are commonly made of high strength carbon steel[6], and are heat-treated to suit the hardness needs of the application.[7] If a panel (22) happens to be harder or thicker than normal, a male (self-riveting) fastener meant to penetrate or pierce the panel would need to be of greater hardness. This could be done by selectively heat treating parts of said fastener, which is known in the art[8]. Expected results occur when varying hardness as a variable; for instance, those of ordinary skill in that art would recognize that case hardening increases brittleness and proneness to fracture, but would allow better penetration of a self-riveting fastener into soft material (e.g., use in stamping tools, dies, etc...). Ordinary experimentation with material properties would yield an optimum hardness value. Note that it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller, 105 USPQ 233.* Further, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).* Refer to MPEP § 2144.05.

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[6] as evidenced by NPL Engineers Edge.

[10] Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinjo US-2001/0048859.

In short, Shinjo suggests a male (self-riveting) fastener (1) comprising: a shaft (2), a co-axial radial flange portion (5) having plurality of circumferentially spaced radial teeth (9) including a "generally" radial planar surface (5, sides of 9) extending "generally" perpendicular to "a" circumference of said flange portion (5), an integral tubular barrel portion (3) of relatively constant cylindrical cross-section, a "generally" radially outwardly extending distal end portion (6,7,8,31) "generally perpendicular to a metal panel (10), and said radial flange portion (5) of said fastener (1), and a bottom wall (blind portion of hole 4);

said fastener (1) being joined to said metal panel (10), which has a "generally" perpendicular portion (11) that makes face to face contact with an outer surface of said radial flange portion (5) and between said radial teeth (9) so as to provide a means for anti-rotation;

wherein a "substantially" continuous convex arcuate surface (inside 3,24,25,31) extends from said bottom wall (blind portion of hole 4) to said "generally" radially outwardly extending distal end portion (6,7,8,31).

However, Shinjo fails to disclose expressly, the specific relative size limitation: "said tubular barrel portion having an axial length equal to or less than sixty percent of an outer diameter of said outer surface of said tubular barrel portion."

Further Shinjo fails to disclose expressly, the specific material limitation: "said male fastener element formed of carbon steel having a hardness greater than 30 Rockwell on the C scale".

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[7] as evidenced by NPL Chicago-Rawhide.

At the time of invention, it would have been obvious to one of ordinary skill in the art, to modify the relative dimensions of the male (self-riveting) fastener taught by Shinjo, because it has been held that a modification such as a mere change in size of a component would be obvious. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose, 105 USPQ 237 (CCPA 1955).* See also, MPEP § 2144.04 which states: *In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976)* ("mere scaling up of a prior art process capable of being scaled up, if such were the case, would not establish patentability in a claim to an old process so scaled." *531 F.2d at 1053, 189 USPQ at 148.*). In *Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984)*, the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify the material of the male (self-riveting) fastener taught by Shinjo, to be of greater hardness than RC-30. Note that it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin, 125 USPQ 416.* It is also common knowledge to choose a material that has sufficient strength, durability, flexibility, hardness, etc. for the application and intended use of that material. In the instant case, one of ordinary skill knows that

[8] as evidenced by Arrand US-6,644,903.

studs in the art are commonly made of high strength carbon steel[9], and are heat-treated to suit the hardness needs of the application.[10] If a panel (10) happens to be harder or thicker than normal, a male (self-riveting) fastener meant to penetrate or pierce the panel would need to be of greater hardness. This could be done by selectively heat treating parts of said fastener, which is known in the art[11]. Expected results occur when varying hardness as a variable; for instance, those of ordinary skill in that art would recognize that case hardening increases brittleness and proneness to fracture, but would allow better penetration of a self-riveting fastener into soft material (e.g., use in stamping tools, dies, etc.). Ordinary experimentation with material properties would yield an optimum hardness value. Note that it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller, 105 USPQ 233.* Further, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).* Refer to MPEP § 2144.05.

[11] Claims 1, 3, 4, 15, and 17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Barry US-3,079,970.

In short, Barry suggests a male (self-riveting) fastener (10) comprising: a shaft (30), a co-axial radial flange portion (20) having plurality of circumferentially spaced radial teeth having a "generally" radial planar surface extending "generally" perpendicular to "a" circumference of said flange portion (20), an integral tubular barrel portion (near 22,28) of relatively constant cylindrical cross-section, and a bottom wall (blind portion of hole 38 near 26);

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[9] as evidenced by NPL Engineers Edge.

said fastener (10) being joined to a metal panel (16) having an L-shaped portion (inverse of 22) including a "generally" perpendicular portion that makes face to face contact with an outer surface of said radial flange portion (20) and between said radial teeth so as to provide a means for anti-rotation, and a radially inwardly directed portion deformed between a "generally" radially outwardly extending distal end portion (12) and said radial flange portion (20) of said fastener (10);

said radially inwardly directed portion being "generally" parallel to said metal panel (16), having a width of "about" one half or less that of said metal panel (16), and accepting said tubular barrel portion (near 22,28) through an opening (14);

[12] Claims 1-13, and 15-20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rosan US-3,125,146.

In short, Rosan suggests a male (self-riveting) fastener comprising: a shaft (22), a co-axial radial flange portion (34,42) having plurality of circumferentially spaced radial teeth (44) including a "generally" radial planar surface (42, sides of teeth 44) extending "generally" perpendicular to "a" circumference of said flange portion (34), and an integral tubular barrel portion (near 36) of relatively constant cylindrical cross-section;

said fastener being joined to a metal panel (54) having an L-shaped portion (near 50,59) including a "generally" perpendicular portion that makes face to face contact with an outer surface of said radial flange portion (34) and between said radial teeth (44) so as to provide a means for anti-rotation, and a radially inwardly directed portion (59) deformed between a

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[10] as evidenced by NPL Chicago-Rawhide.

"generally" radially outwardly extending distal end portion (32) and said radial flange portion (34) of said fastener;

said radially inwardly directed portion (59) being of "generally" rectangular shape and "generally" parallel to said metal panel (54), having a width of "about" one half or less that of said metal panel (54), and accepting said tubular barrel portion (near 36) through an opening (56);

wherein the axial length of said tubular portion (near 36) is less than 60 percent of an outer diameter of said tubular portion.

However, Rosan fails to disclose expressly, the specific material limitation: "said male fastener element formed of carbon steel having a hardness greater than 30 Rockwell on the C scale". Note that Rosan does broadly state that the fastener is "metallic".[12]

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the material of the male (self-riveting) fastener taught by Ladouceur, to be of greater hardness than RC-30. Ladouceur suggests a heat-treated carbon steel,[13] and suggests that it is "understood...the preferred material for the self-riveting fastening element of this invention will depend upon the application including the panel metal". Note that it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin, 125 USPQ 416.* It is also common knowledge to choose a material that has sufficient strength, durability, flexibility, hardness, etc. for the application and intended use of that material. In the instant case, one of ordinary skill knows that studs in the art are commonly made of high strength carbon

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[11] as evidenced by Arrand US-6,644,903.

steel[14], and are heat-treated to suit the hardness needs of the application.[15] If a panel (54) happens to be harder or thicker than normal, a male (self-riveting) fastener meant to penetrate or pierce the panel would need to be of greater hardness. This could be done by selectively heat treating parts of said fastener, which is known in the art[16]. Expected results occur when varying hardness as a variable; for instance, those of ordinary skill in that art would recognize that case hardening increases brittleness and proneness to fracture, but would allow better penetration of a self-riveting fastener into soft material (e.g., use in stamping tools, dies, etc...). Ordinary experimentation with material properties would yield an optimum hardness value. Note that it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller, 105 USPQ 233.* Further, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).* Refer to MPEP § 2144.05.

[13] Although not officially rejected under 102(b)/103(a) for the sake of redundancy, US-3,133,579 to Grimm et al., US-3,245,449 to Mitchell, US-3,270,355 to Tildesley, US-4,430,034 to Fujikawa, and US-5,441,417 to Ladouceur et al. appear to read on most or all of the limitations found in the claims.

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[12] first line claim 1.
[13] column 8 lines 25-30.
[14] as evidenced by NPL Engineers Edge.
[15] as evidenced by NPL Chicago-Rawhide.

Conclusion

[14] The prior art made of record (not previously cited by Applicant) and not relied upon is considered pertinent to applicant's disclosure is as follows:

US 0228161 A	USPAT	Adlam, Jr.
US 0521825 A	USPAT	Shipe
US 0924398 A	USPAT	Stevens
US 1112525 A	USPAT	Darling
US 1332686 A	USPAT	REYNOLDS HENRY S
US 1332687 A	USPAT	REYNOLDS HENRY S
US 1705086 A	USPAT	FERGUSON FRANK C
US 1883906 A	USPAT	HASSELQUIST HUGO S
US 1996128 A	USPAT	MORRIS THOMSON ALFRED
US 20010048859 A1	US-PGPUB	Shinjo, Katsumi
US 20020067975 A1	US-PGPUB	Wojciechowski, Stanley E. et al.
US 20040076489 A1	US-PGPUB	Ladouceur, Harold A.
US 20050025605 A1	US-PGPUB	Vrana, John J. et al.
US 2255964 A	USPAT	RUDOLPH BLAHO
US 2269895 A	USPAT	SYDNEY FOSTER ARTHUR et al.
US 2415695 A	USPAT	EDWARD CANN
US 2444145 A	USPAT	JOSEPH ROSAN
US 3014609 A	USPAT	Hobbs
US 3074292 A	USPAT	POLMON ANTHONY P
US 3079970 A	USPAT	BARRY JOHN K
US 3125146 A	USPAT	Rosan
US 3133579 A	USPAT	GRIMM DAVID W et al.
US 3204679 A	USPAT	JOHN WALSH
US 3242962 A	USPAT	DUPREE JAMES N
US 3245449 A	USPAT	MITCHELL ROBERT H
US 3270355 A	USPAT	MATTHEW TILDESLEY JOHN
US 3381362 A	USPAT	CHURCH HERMAN S et al.
US 3431960 A	USPAT	NEUSCHOTZ ROBERT
US 3461936 A	USPAT	ROSAN JOSE SR
US 3535678 A	USPAT	GULISTAN BULENT
US 3770037 A	USPAT	Ernest; Richard B.
US 3782436 A	USPAT	Steiner; Joseph
US 3820579 A	USPAT	Barry
US 3967669 A	USPAT	Egner; Ronald J.

[16] as evidenced by Arrand US-6,644,903.

US 4018257 A	USPAT	Jack; James A.
US 4193333 A	USPAT	Hallock; Robert L.
US 4430034 A	USPAT	Fujikawa; Tatsuhichi
US 4543023 A	USPAT	Capuano; Terry D.
US 4543701 A	USPAT	Muller; Rudolf R. M.
US 4610072 A	USPAT	Muller; Rudolph R. M.
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[15] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Sharp whose telephone number is (571) 272-7074. The examiner can normally be reached 7:00 am - 5:30 pm Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J.J. Swann can be reached on (571) 272-7075. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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